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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,385	10/06/2004	Pierre-Olivier Lefort	62790(4590-340)	6495

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EXAMINER	
NGUYEN, THANH T	
ART UNIT	**PAPER NUMBER**
2813	
MAIL DATE	**DELIVERY MODE**
09/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/510,385	LEFORT ET AL.	
	Examiner	Art Unit	
	Thanh T. Nguyen	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-21* is/are pending in the application.

4a) Of the above claim(s) *12-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-11 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

This application contains claims 12-18 are drawn to an invention nonelected with traverse in the reply filed on 11/20/06. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "joining is carried out by ***braying***" contains subject matter which was not describe in the specification. It is suggested to delete the limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 9-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding (U.S. Patent No. 2004/0061207) as applied to claims 1-2, 4-7, 9-11 above in view of Wood (U.S. Patent No. 5,861,545).

Referring to figure 4a-4g, Ding teaches a process of fabricating a microstructure having a vacuum cavity (abstract, para. 1), comprising the following steps:

a) Producing, in the thickness of a first silicon wafer (150), a porous silicon region (136/140) (para. 52, fig. 4D, a getter gas absorber layer, see para. 4) intended to format least a part of one wall of the cavity and capable of absorbing residual gases in the cavity; and

b) Joining the first silicon wafer (150) to a second wafer (160), so as to produce the cavity (Para. 53, fig. 4F)

Regarding to claim 2, wherein step a) furthermore includes a step of impregnating the porous silicon region with another material (para. 15) that can also absorb residual gases in the cavity.

Regarding to claim 4, wherein prior to step b), the process includes a step of carrying out a physico-chemical preparation of the surfaces of the wafers used in step b) (see paragraph# 52).

Regarding to claim 5, wherein prior to step b), the process includes a step of outgasing the wafers used in step b) (see paragraph# 53).

Regarding to claim 6, wherein the joining operation of step b) is carried out under vacuum (see paragraph# 53).

Regarding to claim 7, wherein the joining operation is carried out by bonding at ambient temperature (see paragraph# 53).

Regarding to claim 9, wherein the other material that can also absorb the residual gases in the cavity consists of titanium (see paragraph# 15).

Regarding to claim 10, wherein the second wafer and/or the intermediate wafer are made of silicon or glass (see abstract, para# 18).

Regarding to claim 11, wherein the process is applied collectively to several micro structures (see para# 16, abstract).

Regarding to claims 20, 21, during the annealing step the porous silicon region is activated allowing a surface of the porous silicon layer to be cleaned by desorption of H molecules present after production of the porous silicon region (see paragraphs # 32, 47, 53).

Ding teaches a process of fabricating a microstructure having a vacuum cavity (abstract, Para. 1) by bonding two wafers at the temperature greater than 280°C to form a strong and uniform bond (see para.# 24, 32). However, the reference does not teach the cavity has a predetermined height, the joining operation of step b) is carried out by means of an intermediate wafer whose thickness contributes to the height of the cavity and the specific annealing temperature, at between 400 and 1000.degree. C., the microstructure obtained after step b) so as to strengthen the bond.

Wood teaches in figure 3, forming a first wafer (83), second wafer (87), and the intermediate wafer (called spacer, 86).

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made would form an intermediate wafer between the upper and the lower wafer in process of Ding as taught by Wood because intermediate wafer would help to join

the upper wafer to the lower wafer and as well as to define the thickness of the cavity between the wafer.

It would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made to optimize the annealing temperature, since it has been held that where the general conditions of a claim are disclosed in the prior art (i.e.- the annealing temperature), discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

The specification contains no disclosure of either the critical nature of the claimed arrangement (i.e.- wherein annealing temperature, at between 400 and 1000°C) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the applicant must show that the chosen limitations are critical. In re Woodruff, 919 F.2d 1575, 1578 (FED. Cir. 1990).

Absent a showing of unexpected result, a change in sequence involves routine optimization of process of prior art and would have been obvious to one skilled in the art at the time the invention was made. A change in sequence/resversal of process steps is obvious under 35 USC 103 (exparte Rubin, 128 USPQ 440 (Bd. App. 1959)). See also in re Burhans, 154 F.2d 690,69 USPQ 330 (CCPA).

Therefore, it would have been obvious to a person of ordinary skill in the requisite art at the time of the invention was made would anneal the wafer to a specific temperature range in process of Ding because annealing process would strengthen the bond between the wafers.

Response to Arguments

Applicant's arguments with respect to claims 1-7, 9-21 have been considered but are moot in view of the new ground(s) of rejection.

Applicant contends that Ding does not teach the advantage of high temperature annealing operation in order to strengthen the bond as well as during the annealing process activation of the porous silicon takes place to allows the surface of the porous silicon to be cleaned by desorption of the H molecules present after production of the porous silicon layer. In response to applicant· that this is not persuasive because Ding teaches annealing operation take place at the temperature greater than 280°C to form a strong and uniform bond (see para.# 24, 32). Wherein the anneal process take place at the temperature greater than 280°C to allow the surface of the porous silicon to be cleaned by desorption of the H molecules present after production of the porous silicon layer (see paragraphs # 32, 47, 53). Therefore, it is obvious that Ding provide the same advantage as the Instant Invention.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached on (571) 272-1702. The fax phone number for this Group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to thy Private PAIR system, contact the Electronic Business center (EBC) at 866-217-9197 (toll-free).

Thanh Nguyen
Patent Examiner
Patent Examining Group 2800

TTN